

Appl. No. 10/731,907
Amdt. dated Nov. 16, 2005
Reply to Office action of Jul. 19, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims:

1-11. (canceled)

12. (currently amended) A method of electroless plating of features on a semiconductor wafer, comprising the step of:

providing a plating apparatus with a plurality of rollers;

swinging one of said plurality of rollers out of a first position, loading said wafer on the remaining rollers in said plurality, and then swinging said roller back into a second position;

supporting said wafer with ~~[[a]]~~ the plurality of rollers;

rotating said wafer by rotating each of said plurality of rollers; and

flowing plating solution over the surface of said wafer.

13. (previously presented) The method of Claim 12, wherein said step of supporting comprises supporting said wafer in a groove in each of said rollers in said plurality.

14. (previously presented) The method of Claim 12, wherein said step of rotating said wafer comprises turning a gear on each of said rollers by turning a central sun gear engaged with said gear on each of said rollers.

15. (previously presented) The method of Claim 12, further comprising the step of immersing said wafer and said rollers in said plating solution.

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16. (previously presented) The method of Claim 15, wherein said step of immersing said wafer comprises immersing said wafer and said rollers in a tank and said step of flowing plating solution comprises flowing said solution from the bottom of said tank to the top of said tank.

17. (canceled)

18. (currently amended) A method of electroless plating of features on a semiconductor wafer, comprising the steps of:

providing a plating apparatus with a plurality of rollers;

swinging one of said plurality of rollers out of a first position, loading said wafer on the remaining rollers in said plurality, and then swinging said roller back into a second position;

supporting said wafer with [[a]] the plurality of parallel rollers, each of said rollers having grooves for supporting an edge of said wafer;

immersing said wafer and said rollers in plating solution;

rotating said wafer by rotating said parallel rollers; and

flowing plating solution over the surface of said wafer during said step of rotating said wafer.

19. (previously presented) The method of Claim 18, wherein said step of rotating said wafer comprises turning a gear on each of said support means by turning a central sun gear engaged with said gear on each of said rollers.

20. (previously presented) The method of Claim 18, wherein said step of immersing said wafer comprises immersing said wafer and said rollers in a tank and said step of flowing plating solution comprises flowing said solution from the bottom of said tank to the top of said tank.

21. (canceled)

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22. (new) A method of processing semiconductor wafers, comprising the steps of:
- providing a processing tank having an inside portion for containing a liquid, an outside portion for containing liquid over-flown from the inside portion of the tank, and a bottom section of the processing tank communicating with the outside portion for recycling the liquid from the outside portion into the inside portion of the tank;
 - loading a batch of wafers on rollers in the inside portion of the processing tank in a substantially vertical position;
 - securing the batch of wafers with a capture roller;
 - filling the inside portion of the processing tank with processing liquid;
 - rotating the batch of wafers on the rollers;
 - flowing the liquid from the bottom of the processing tank in a laminar flow manner and a constant laminar flow speed perpendicular to the axis of the rotation near the batch of wafers; and
 - controlling the rotation speed of the batch of wafers and the flow speed of the liquid to maintain a periodical relative motion between the wafer surface and the processing liquid.
23. (new) The method of claim 22, in which the processing is plating a substantially uniform layer of metal on copper metal.
24. (new) The method of claim 23, in which the layer of metal includes aluminum.